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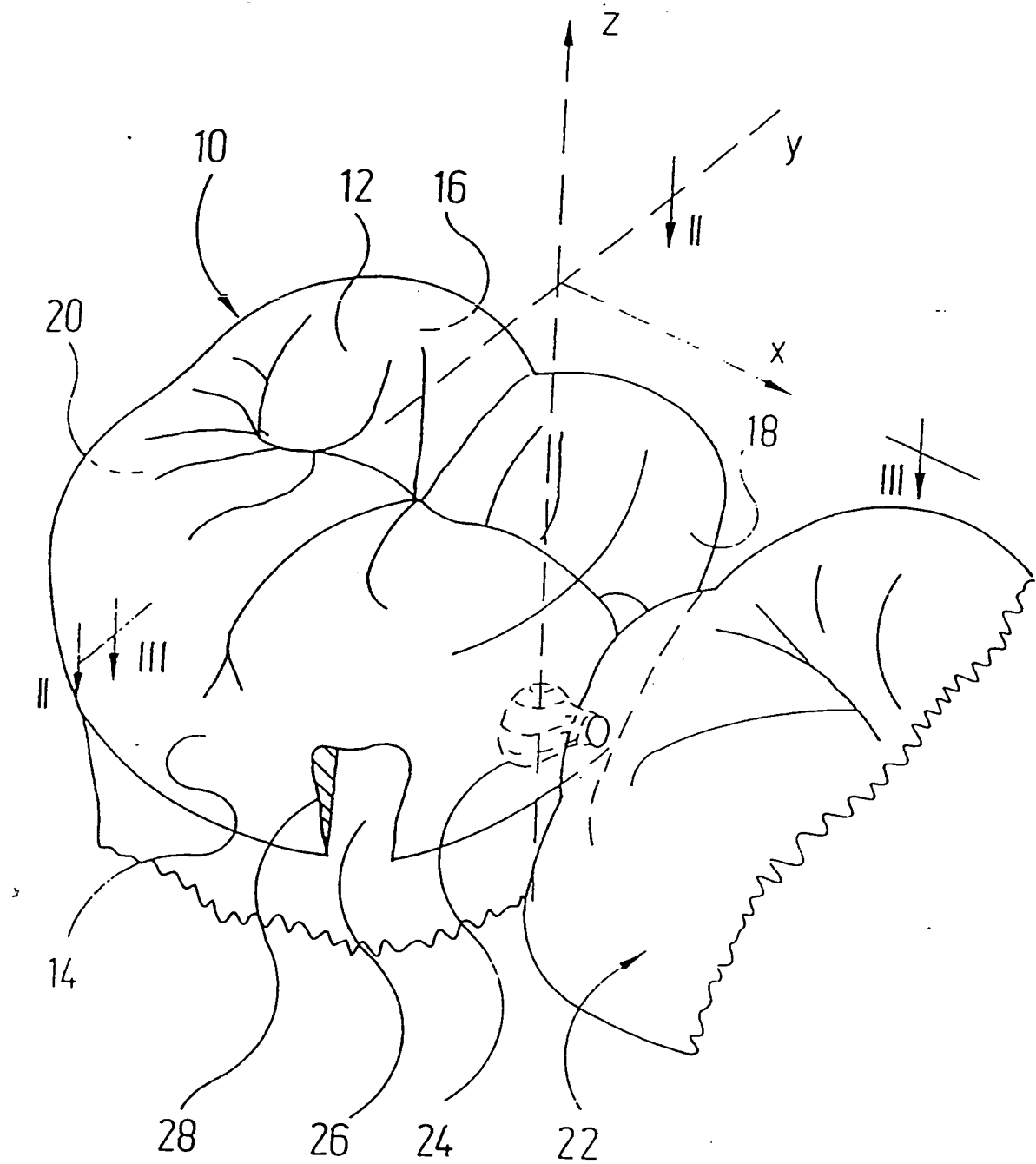
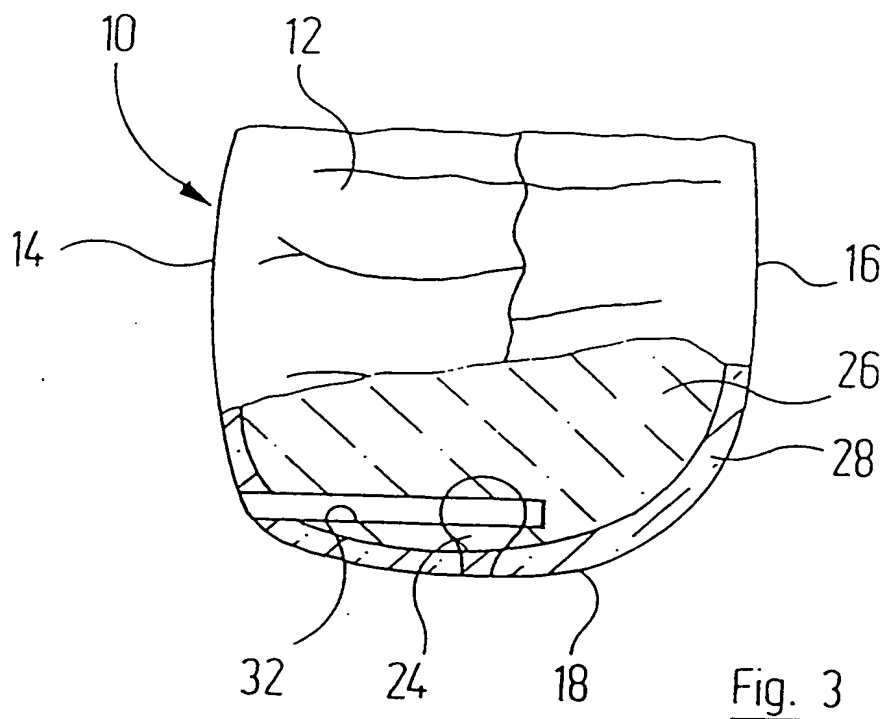
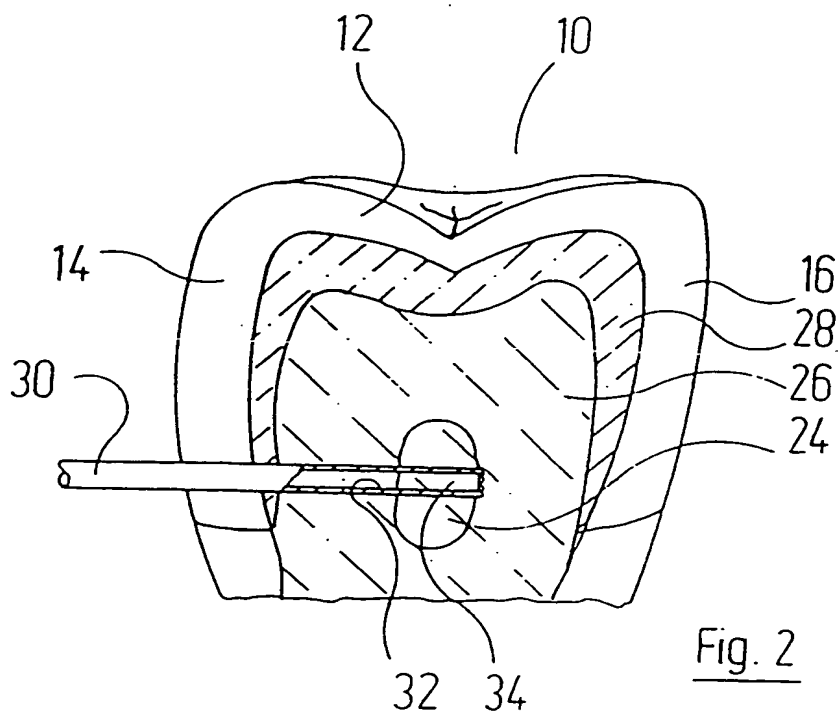


Fig. 1



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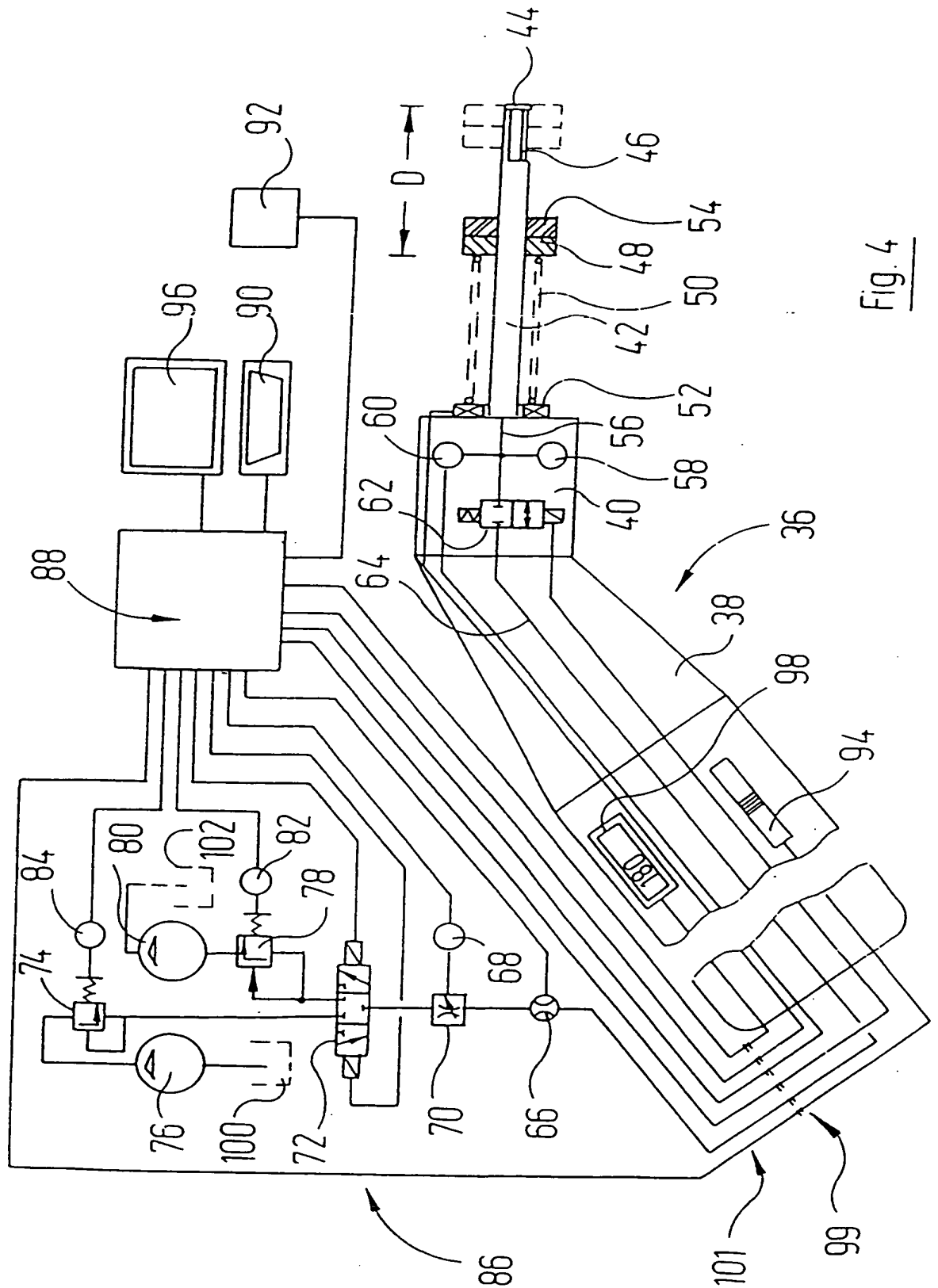


Fig. 4

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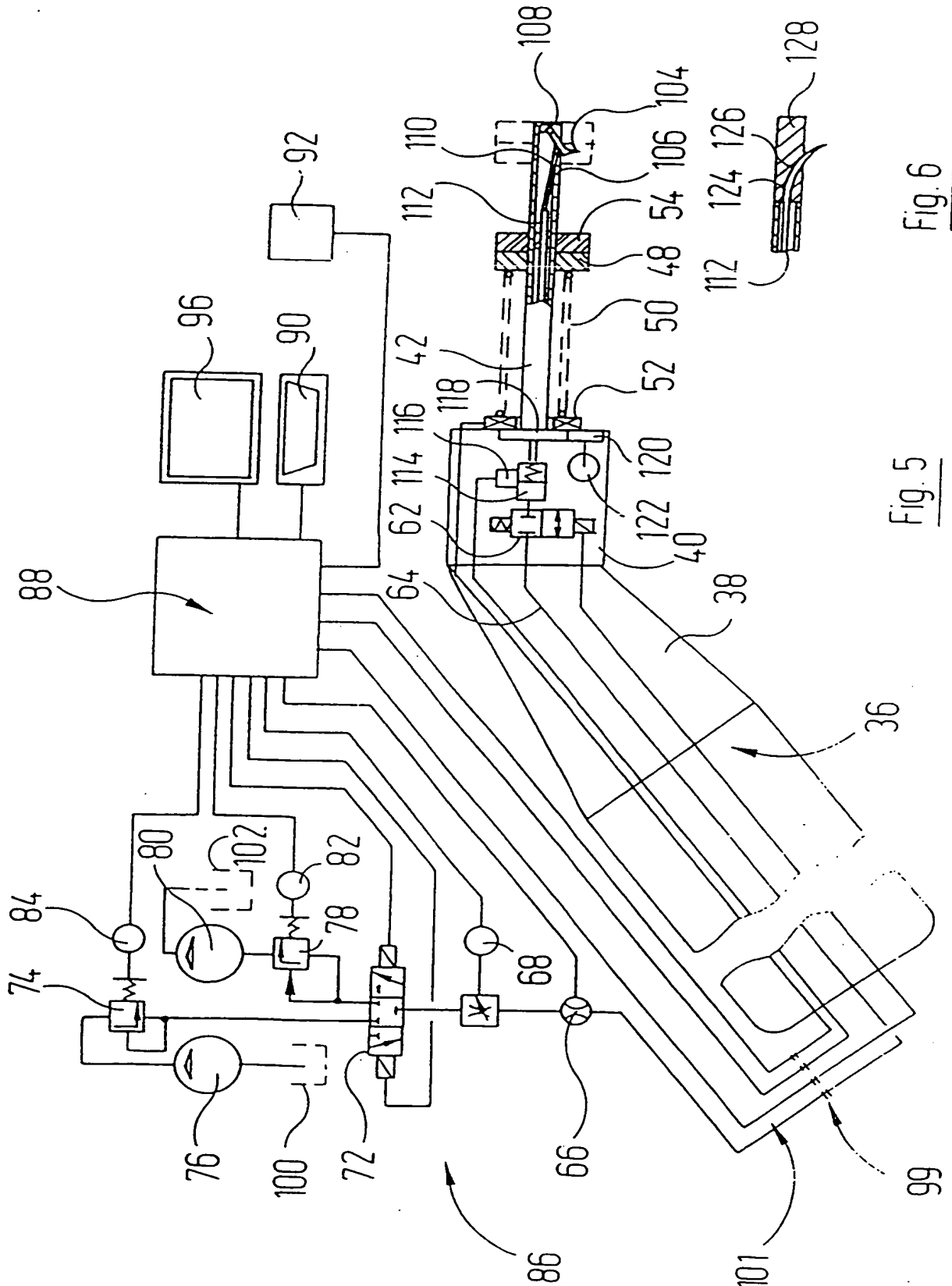


Fig. 6

Fig. 5

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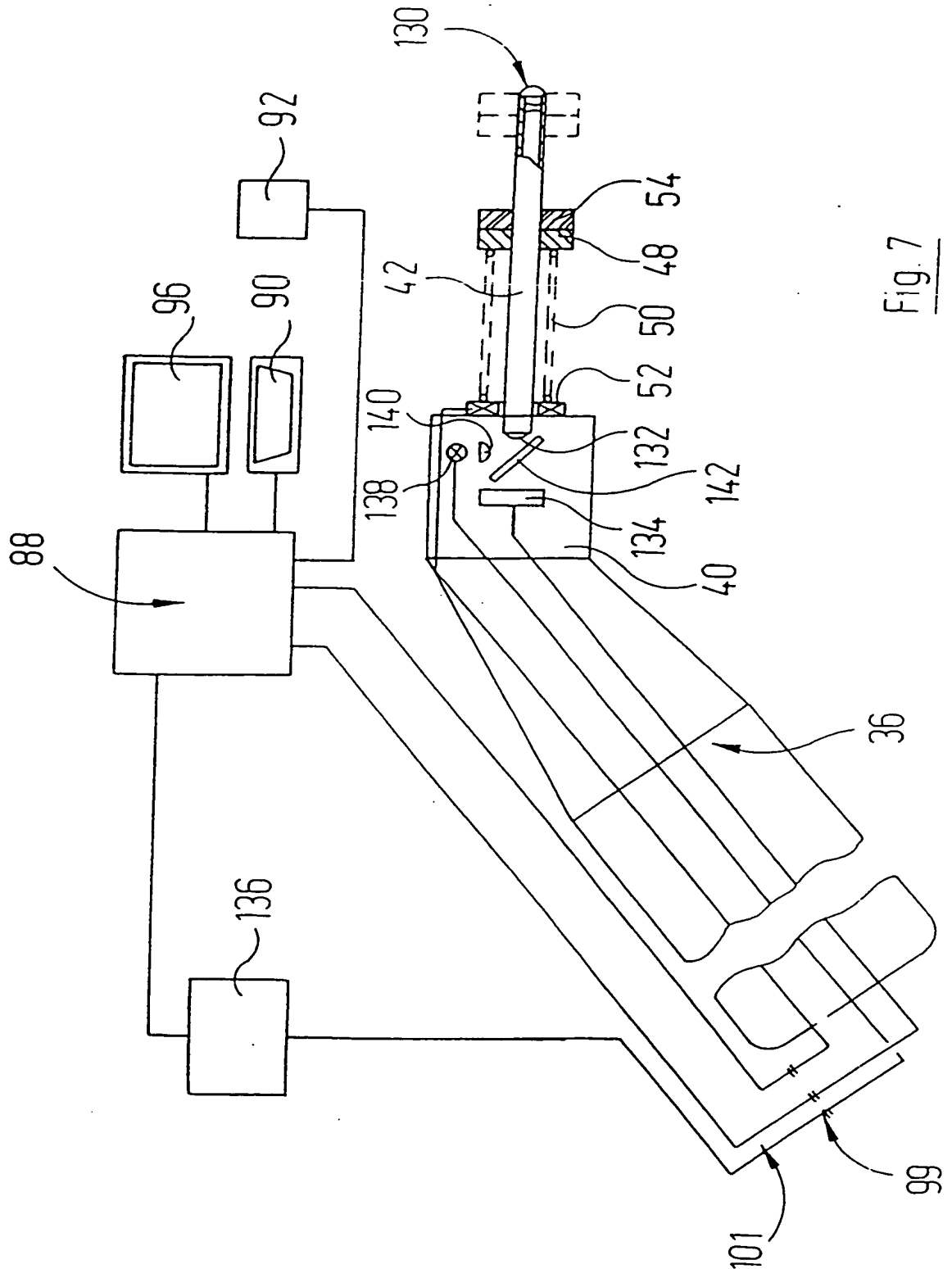


Fig. 7

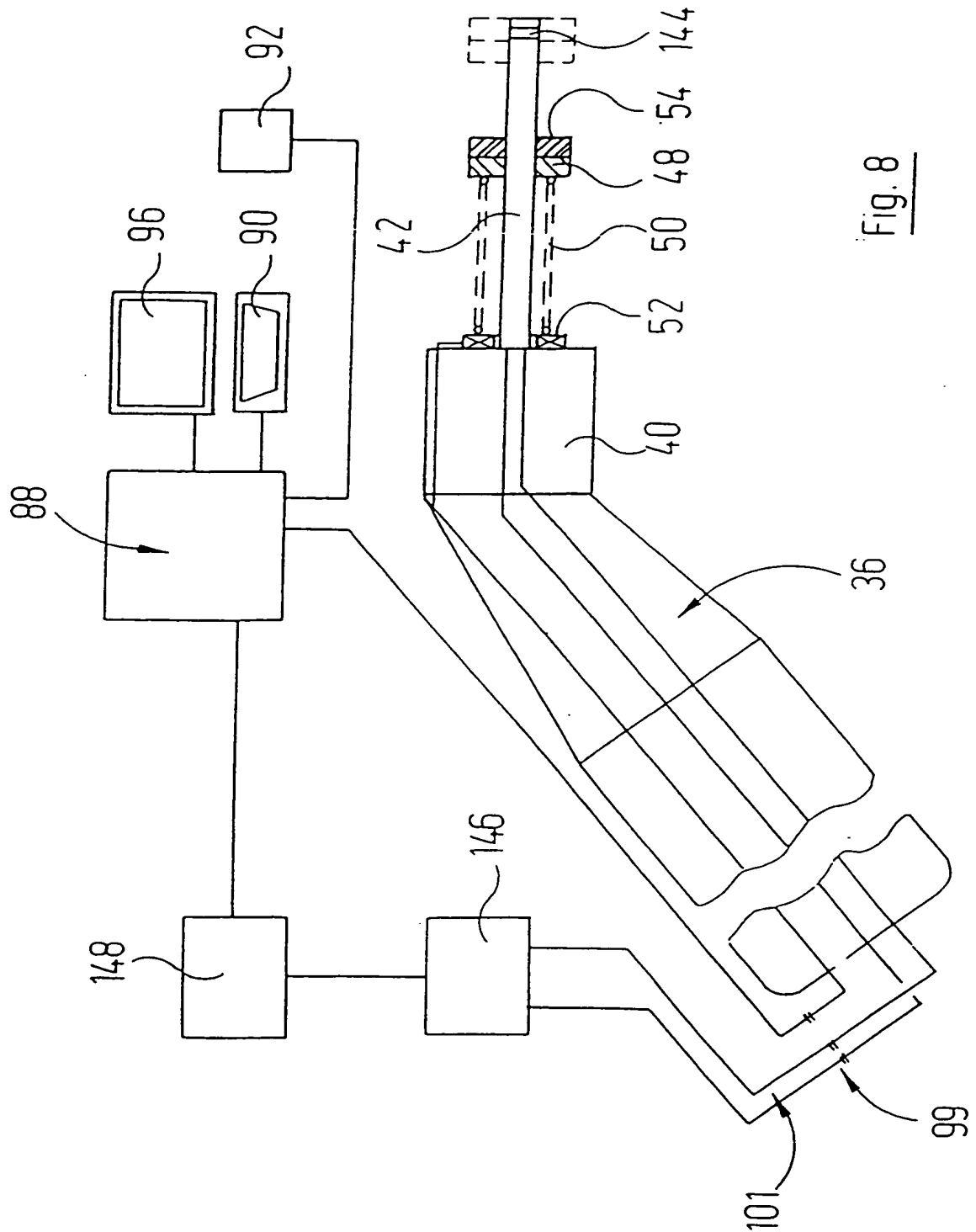


Fig. 8

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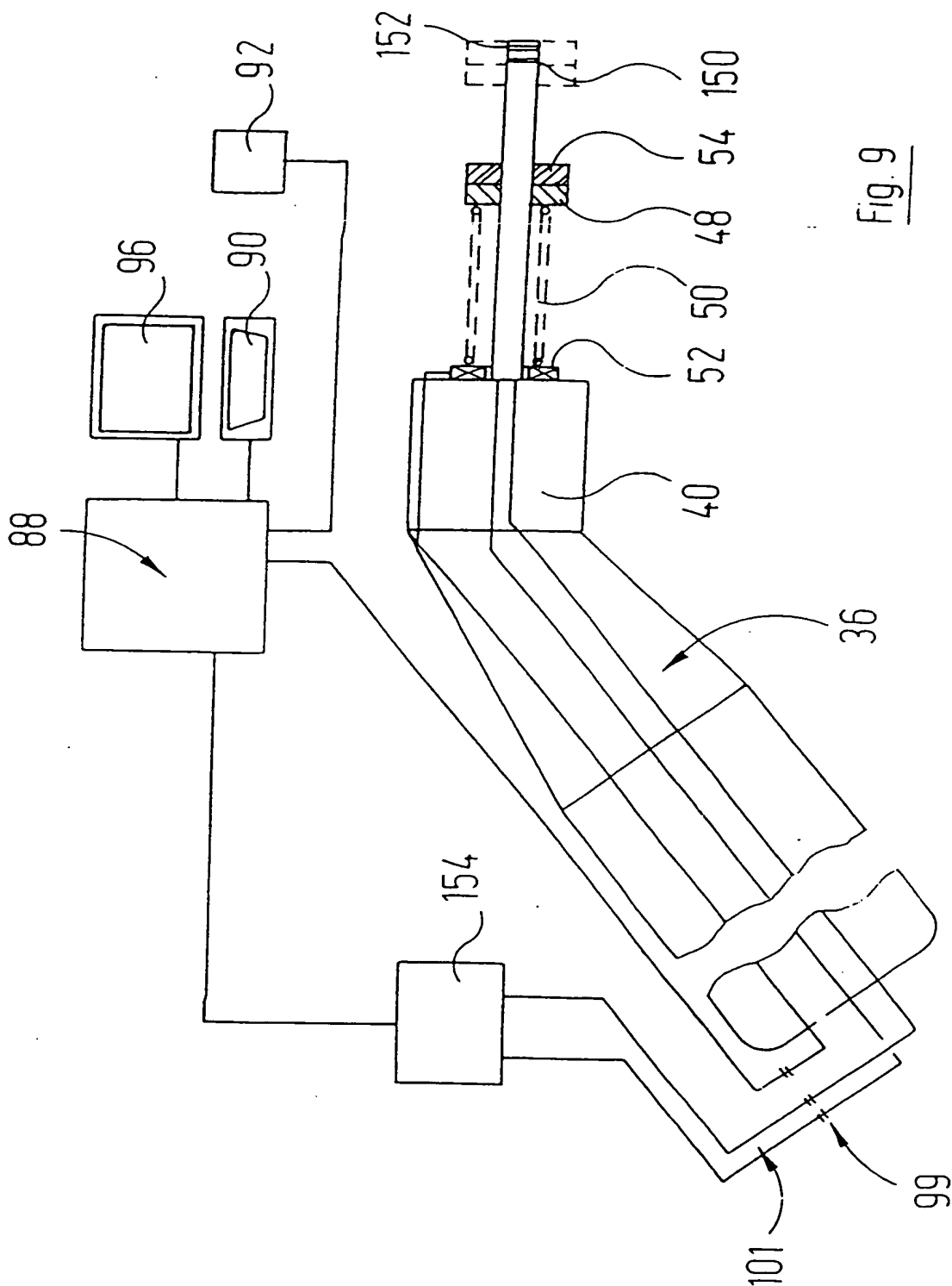


Fig. 9

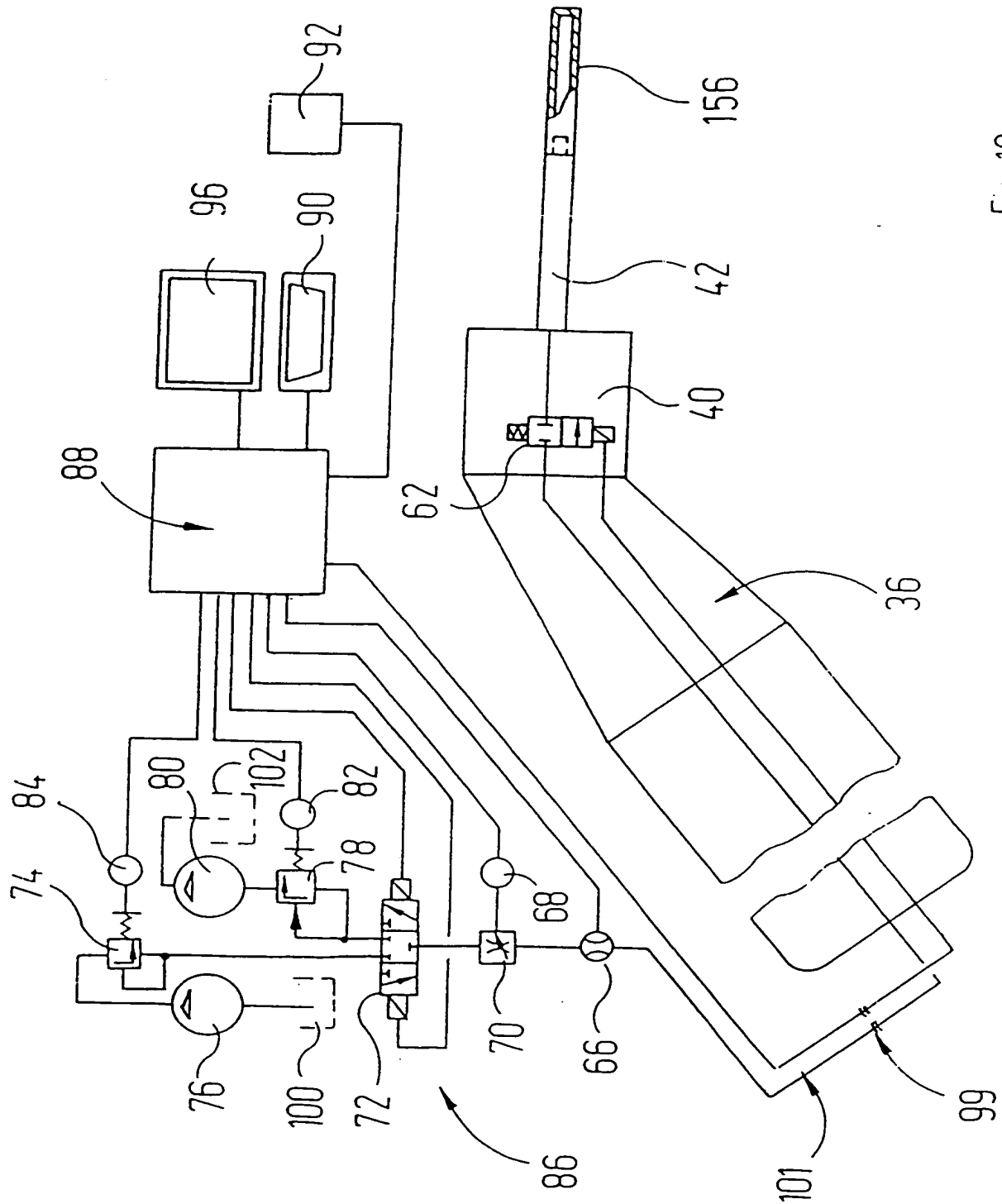


Fig. 10

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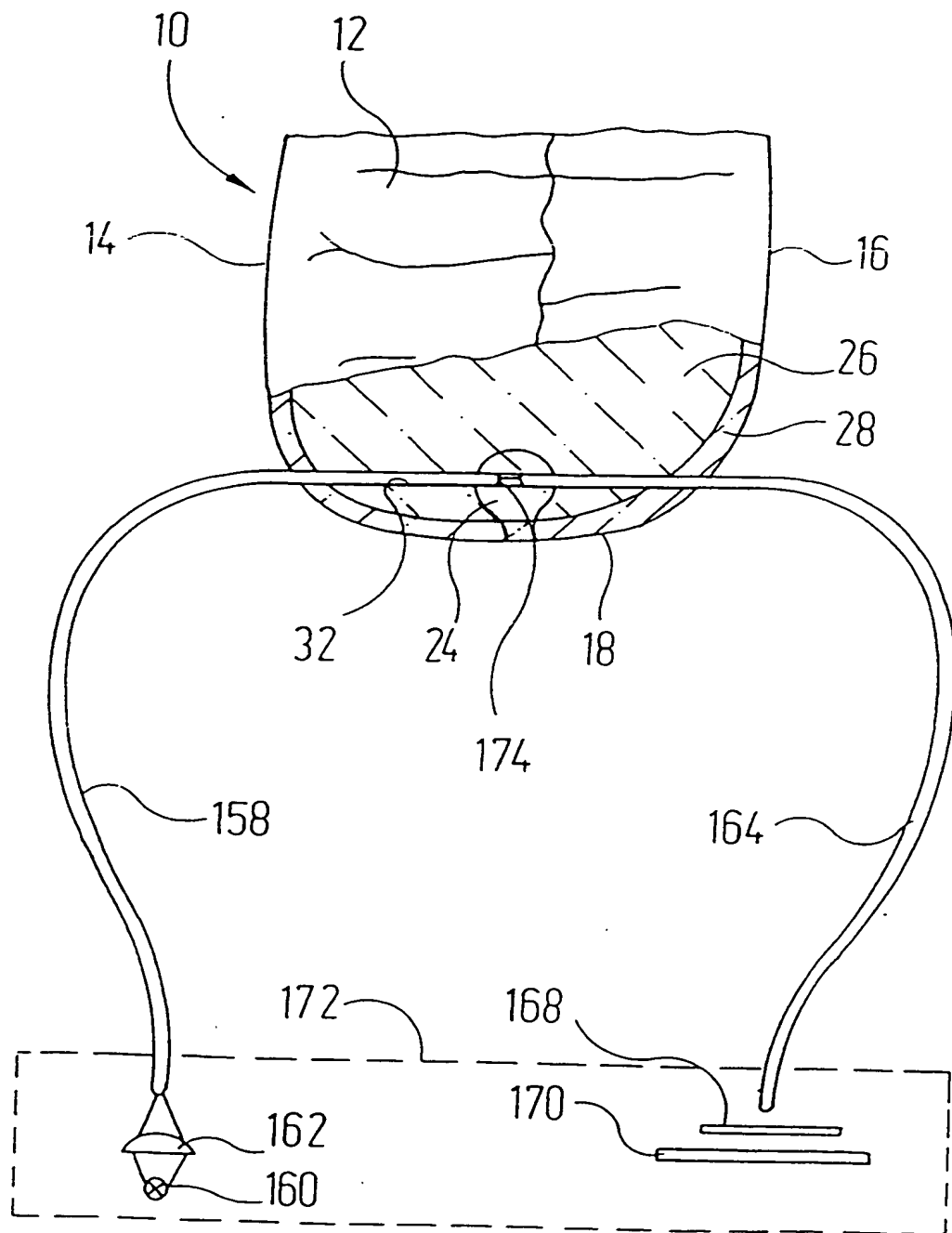


Fig. 11

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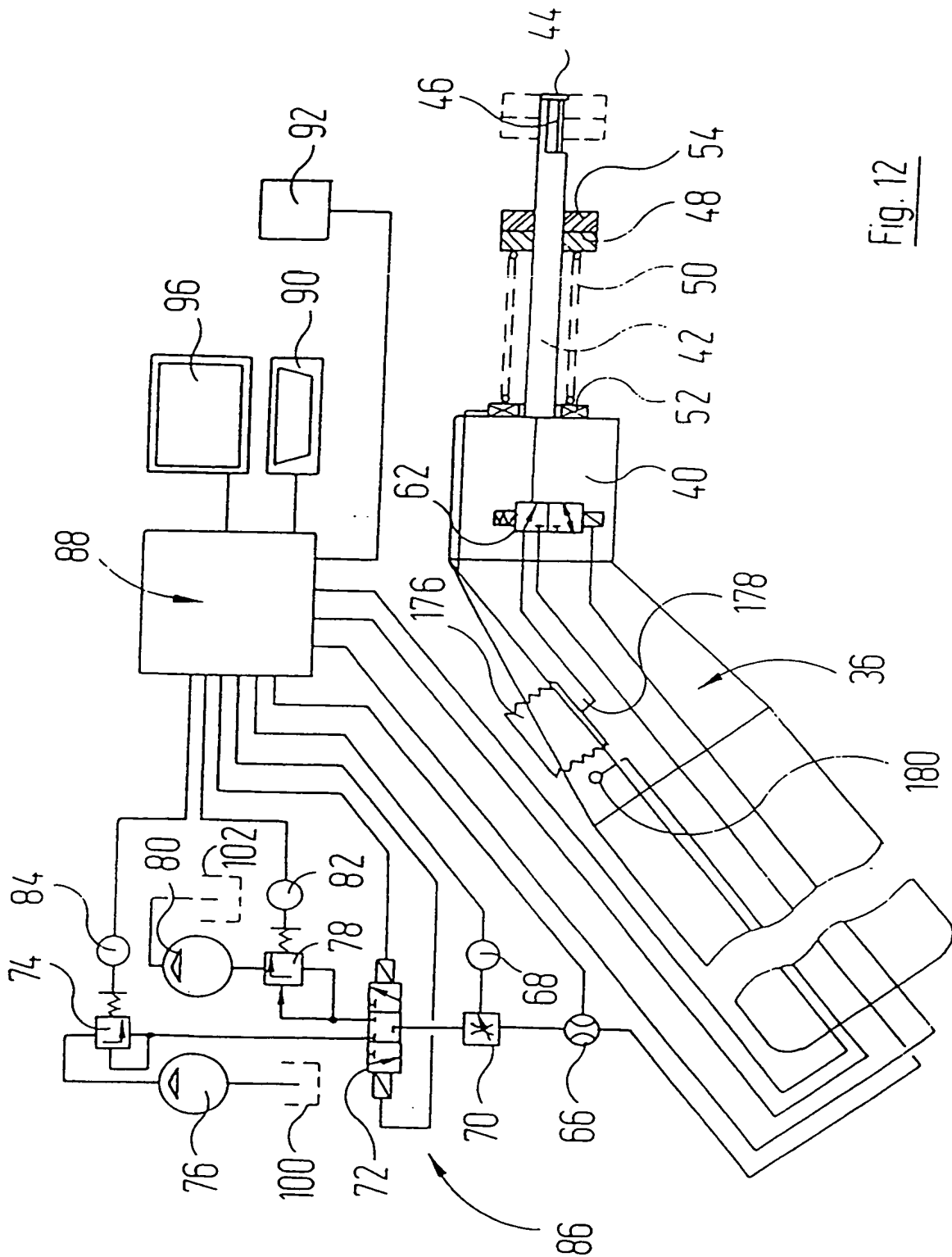


Fig. 12

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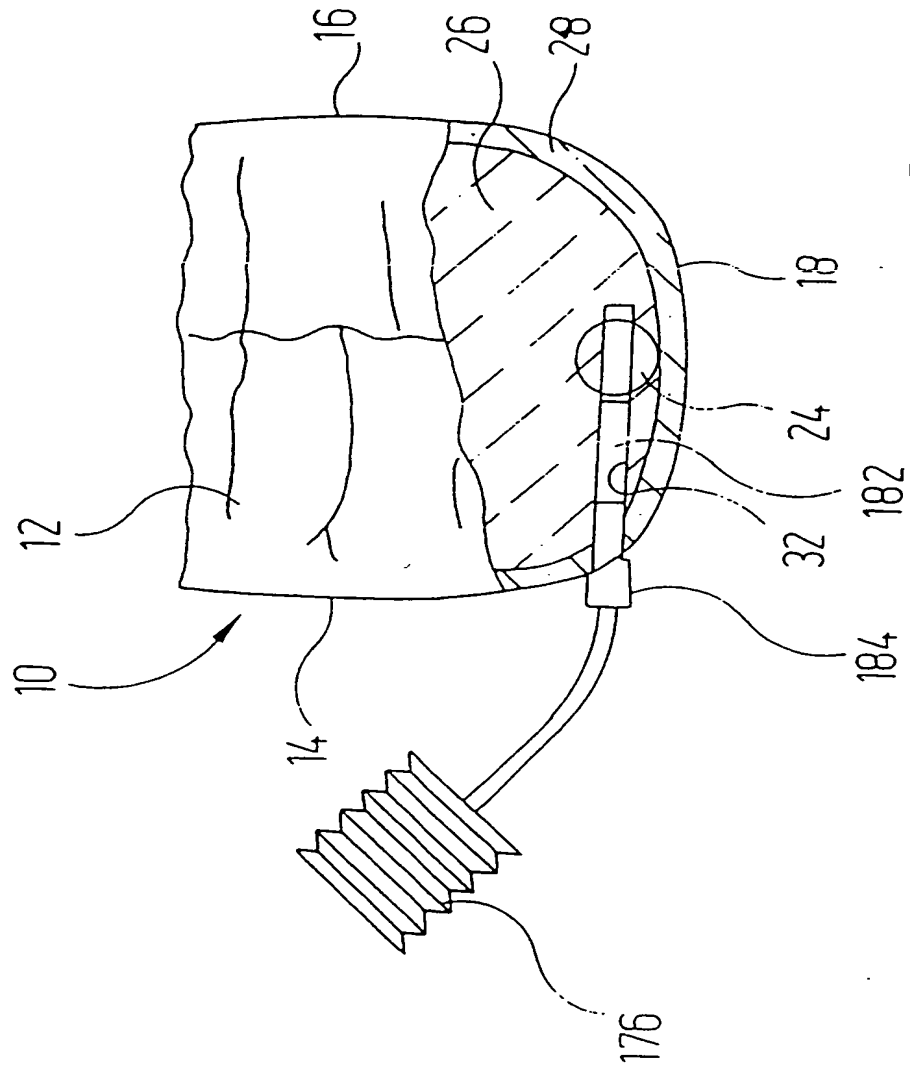
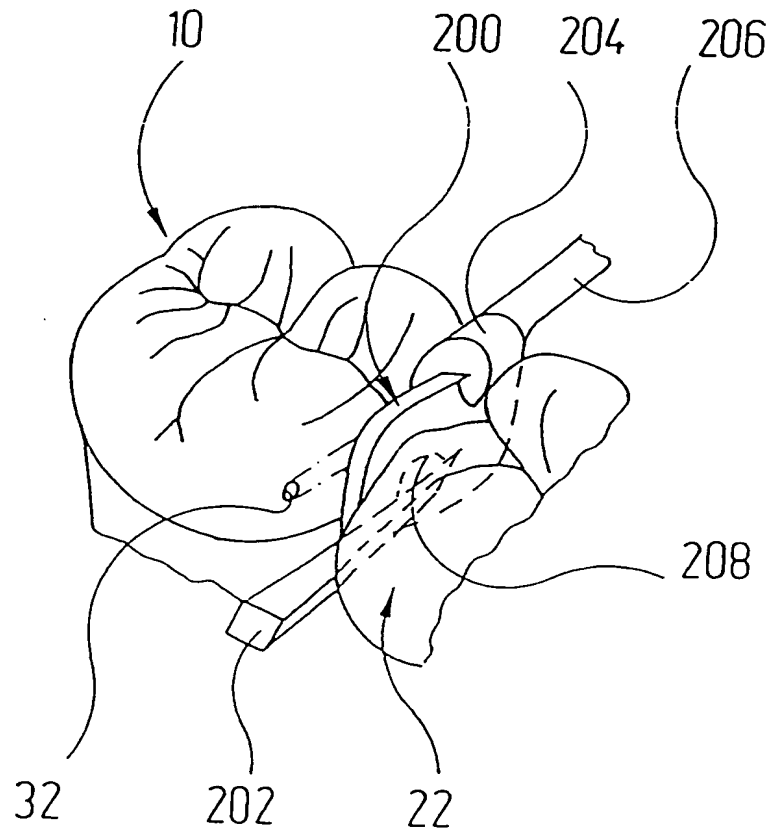
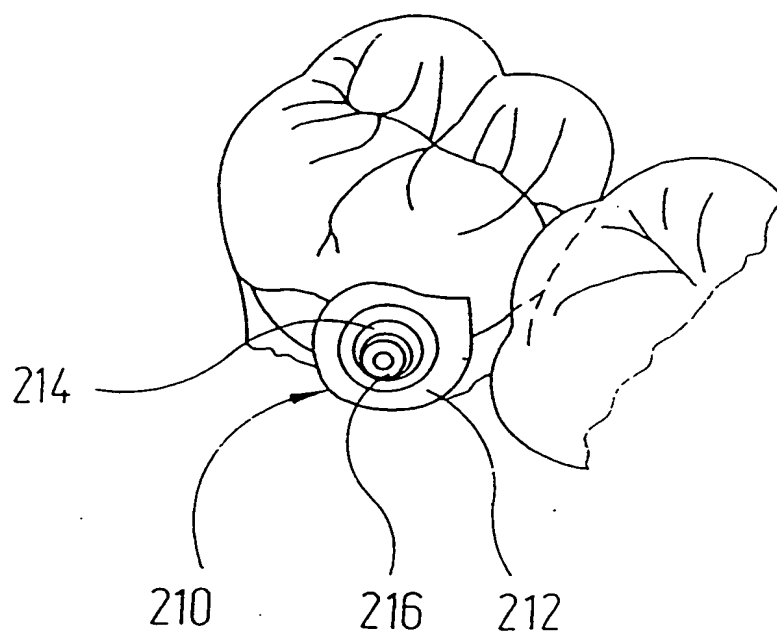


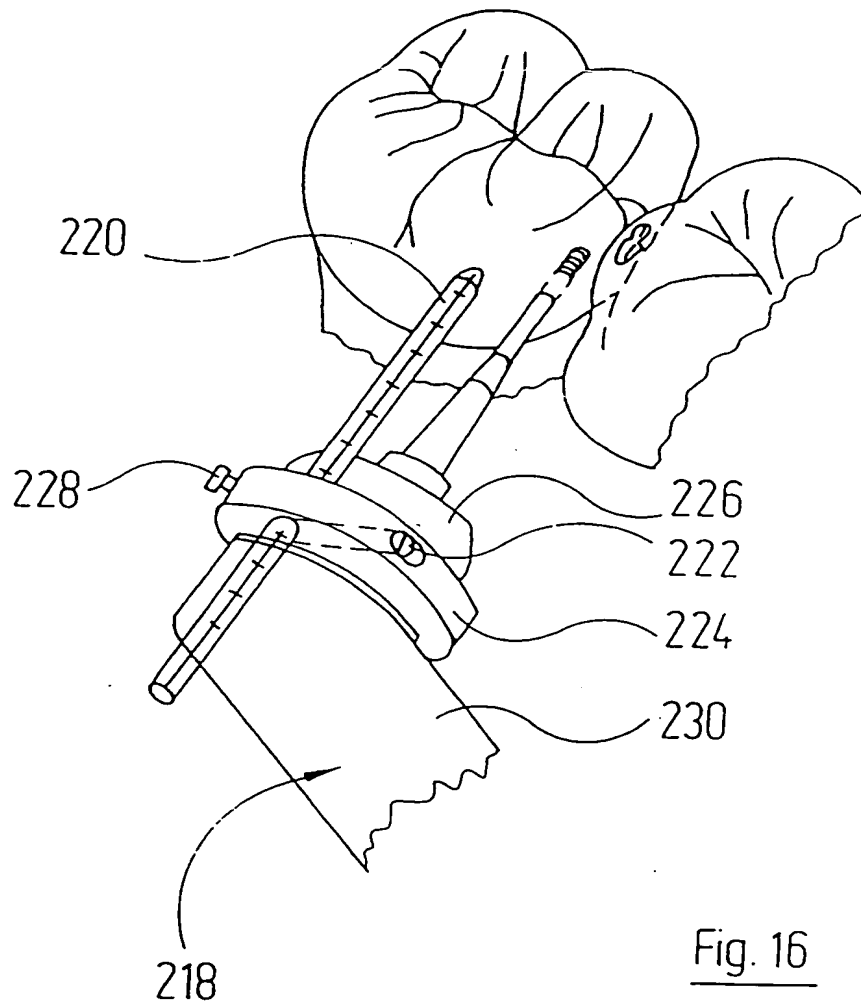
Fig. 13

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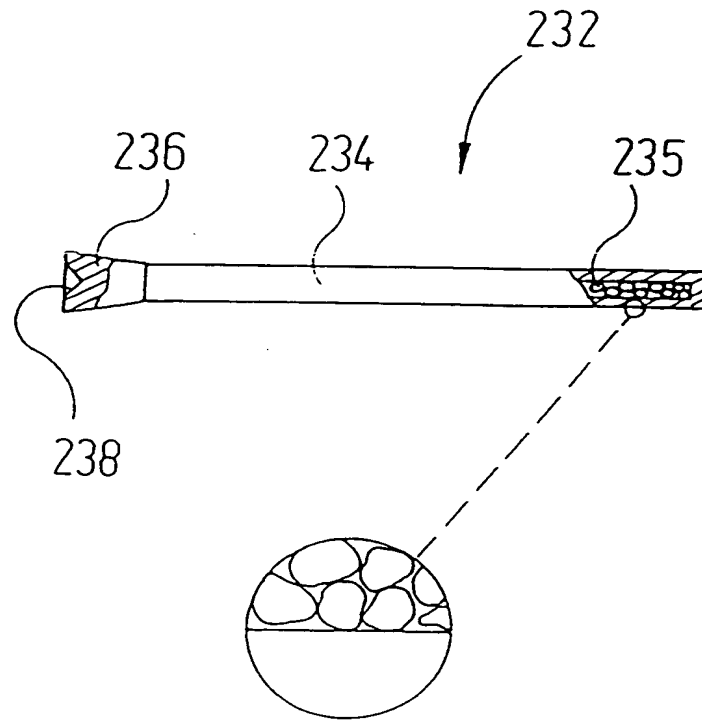
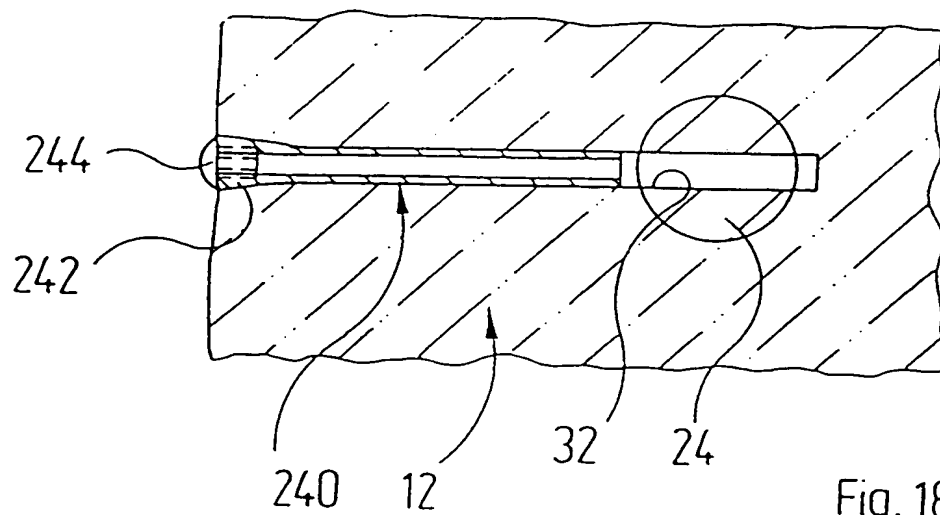
Fig. 14

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Fig. 15



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Fig. 17Fig. 18

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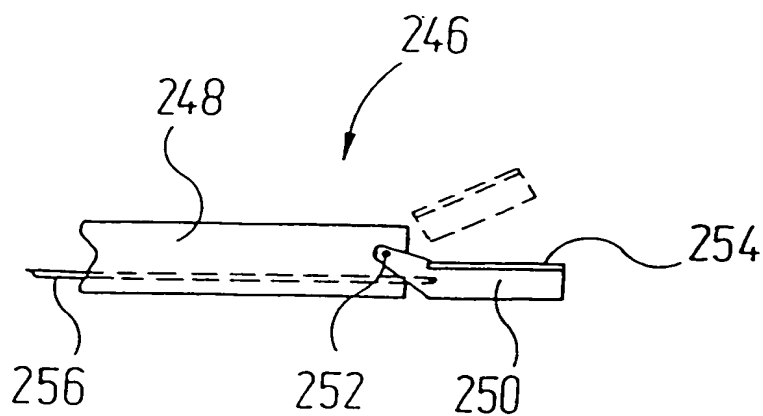


Fig. 19

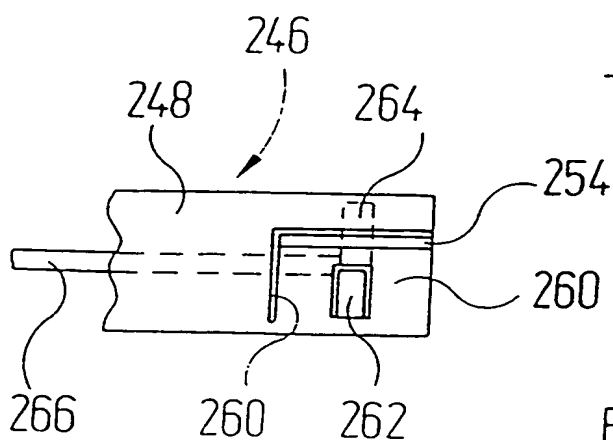


Fig. 20

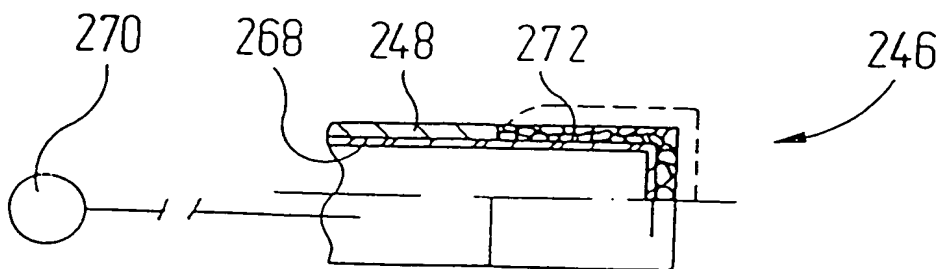


Fig. 21

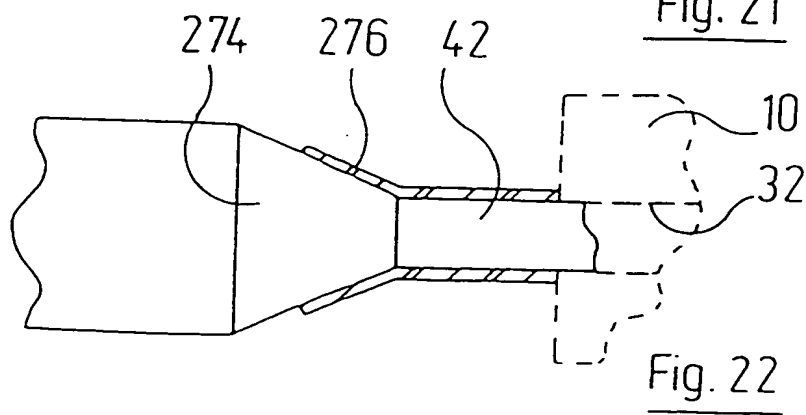


Fig. 22

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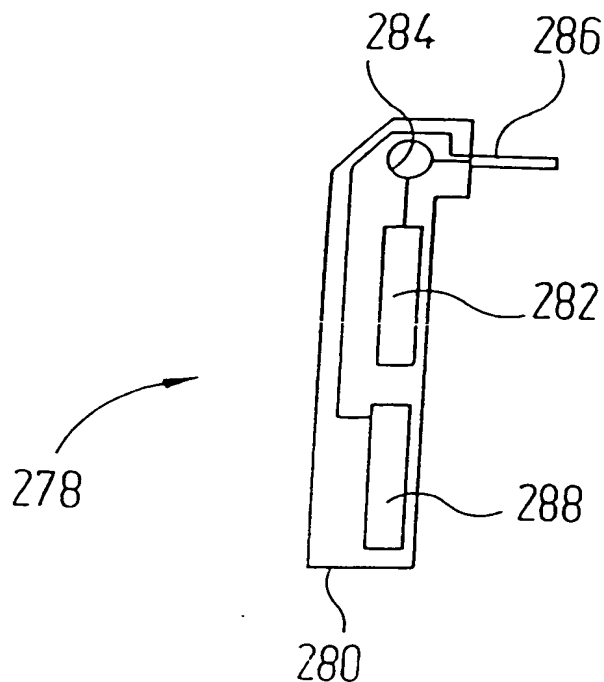


Fig. 23

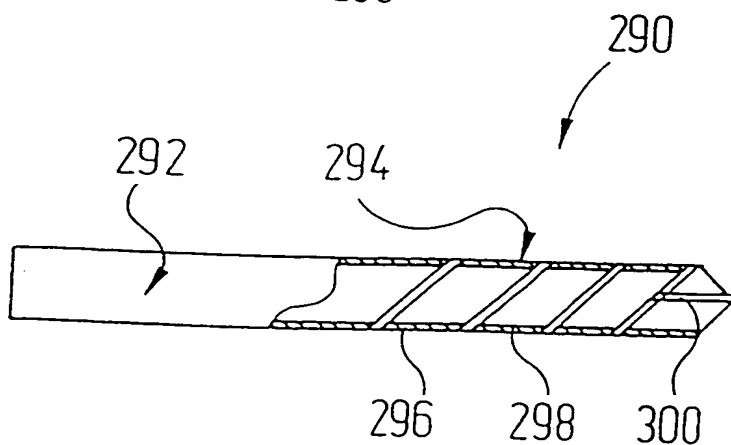


Fig. 24

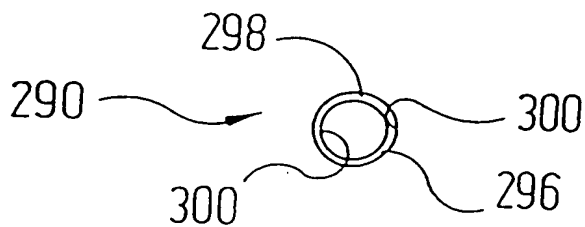
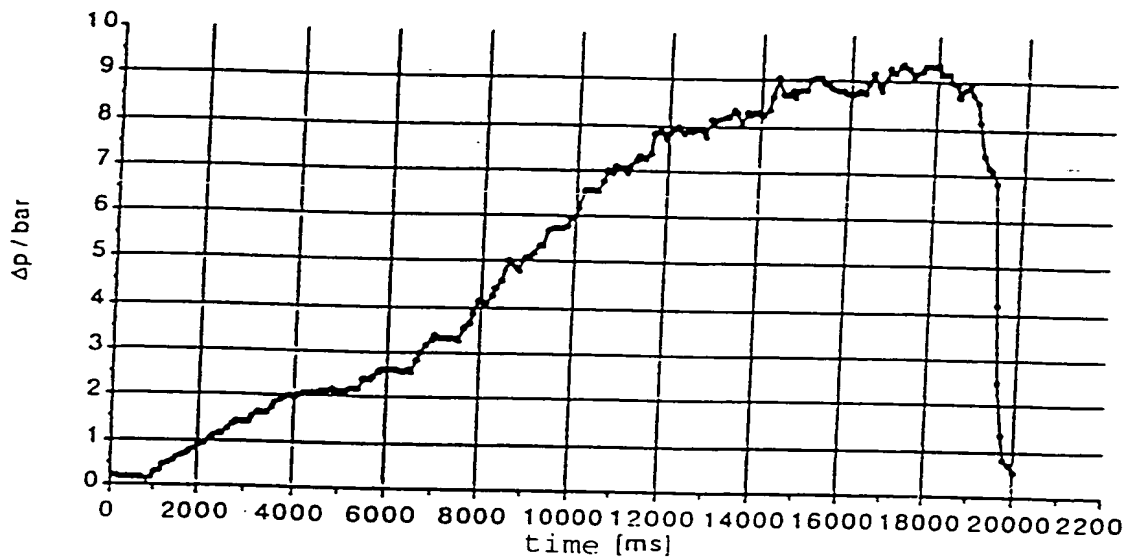


Fig. 25

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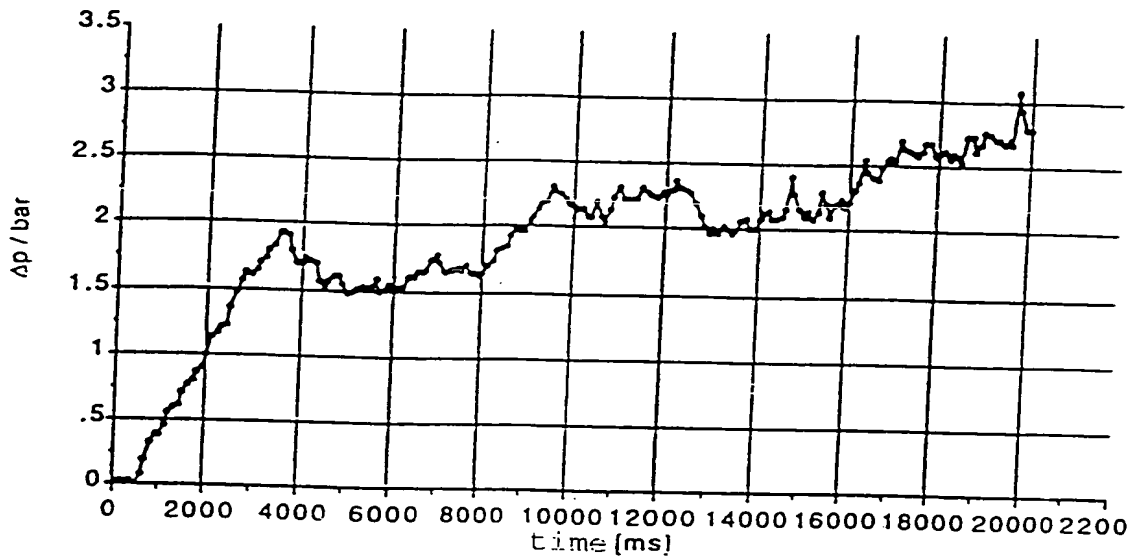


Hydrodynamic diagnosis of a suspected approximal primary caries lesion:

Inducible high pressure difference between working channel and suspected approximal caries lesion as sign of low-grade structural damage to the tooth volume region in question (end of the measurement after 18,000 ms).

Fig. 26

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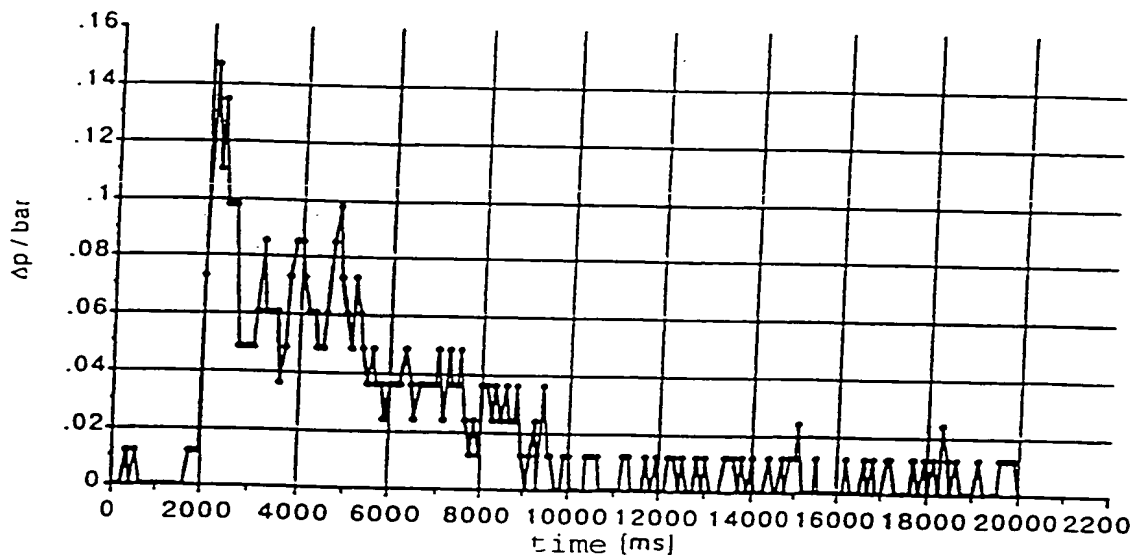


Hydrodynamic diagnosis of a suspected approximal primary caries lesion:

Inducible moderate pressure difference between working channel and suspected approximal caries lesion as sign of moderate structural damage (initial caries) to the tooth volume region in question. A suitable treatment medium is perfused into the lesion through the working channel and preferably remineralization is attempted to be induced. The success of this can be quantitatively monitored some time after this treatment in the same measuring arrangement.

Fig. 27

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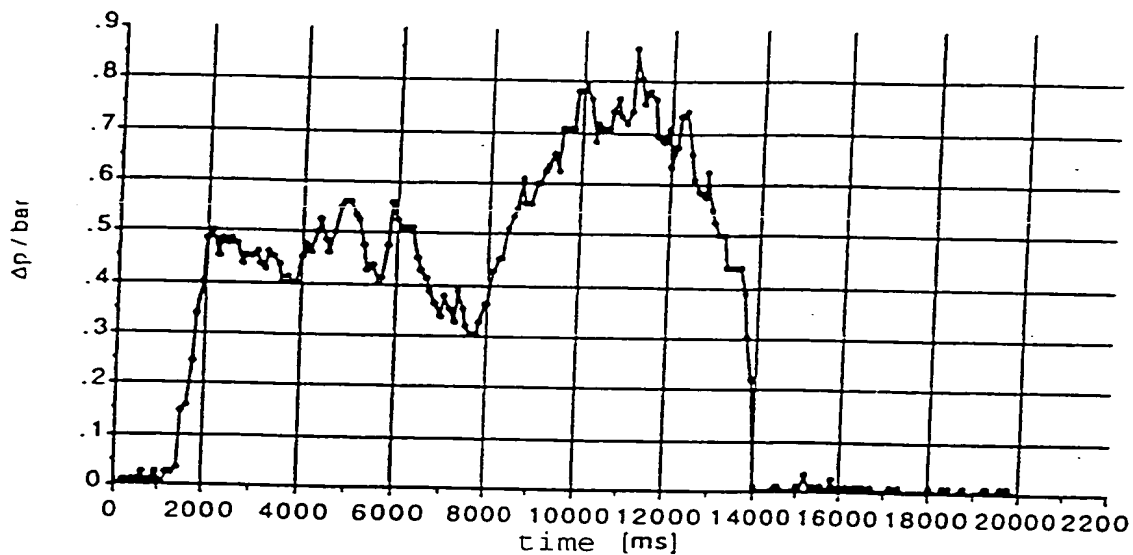


Hydrodynamic diagnosis of a suspected approximal primary caries lesion:

Despite a high volumetric flow, no pressure difference between working channel and suspected approximal caries lesion can be induced. There is incursion of the natural caries access in the sense of an open cavitation (established approximal caries); the liquid volume emerges through the natural caries access into the approximal space. Through the working channel, hydrodynamic preparation of the caries lesion is effected, the interfaces are chemically conditioned and the defect volume and the working channel are definitively closed with a suitable filling material (reinfiltrated).

Fig. 28

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Hydrodynamic diagnosis of a suspected secondary caries lesion under an existing crown:
Despite a high volumetric flow, no pressure difference between working channel, crown and suspected secondary caries lesion can be induced (end of the measurement after 14,000 ms). There is incursion of the edge region of the crown in the sense of a carious cavitation. It is possible through the working channel to effect hydrodynamic preparation of the caries lesion, to chemically condition the interfaces and to definitively close (reinfiltrate) the defect volume and the working channel with a suitable filling material.

Fig. 29

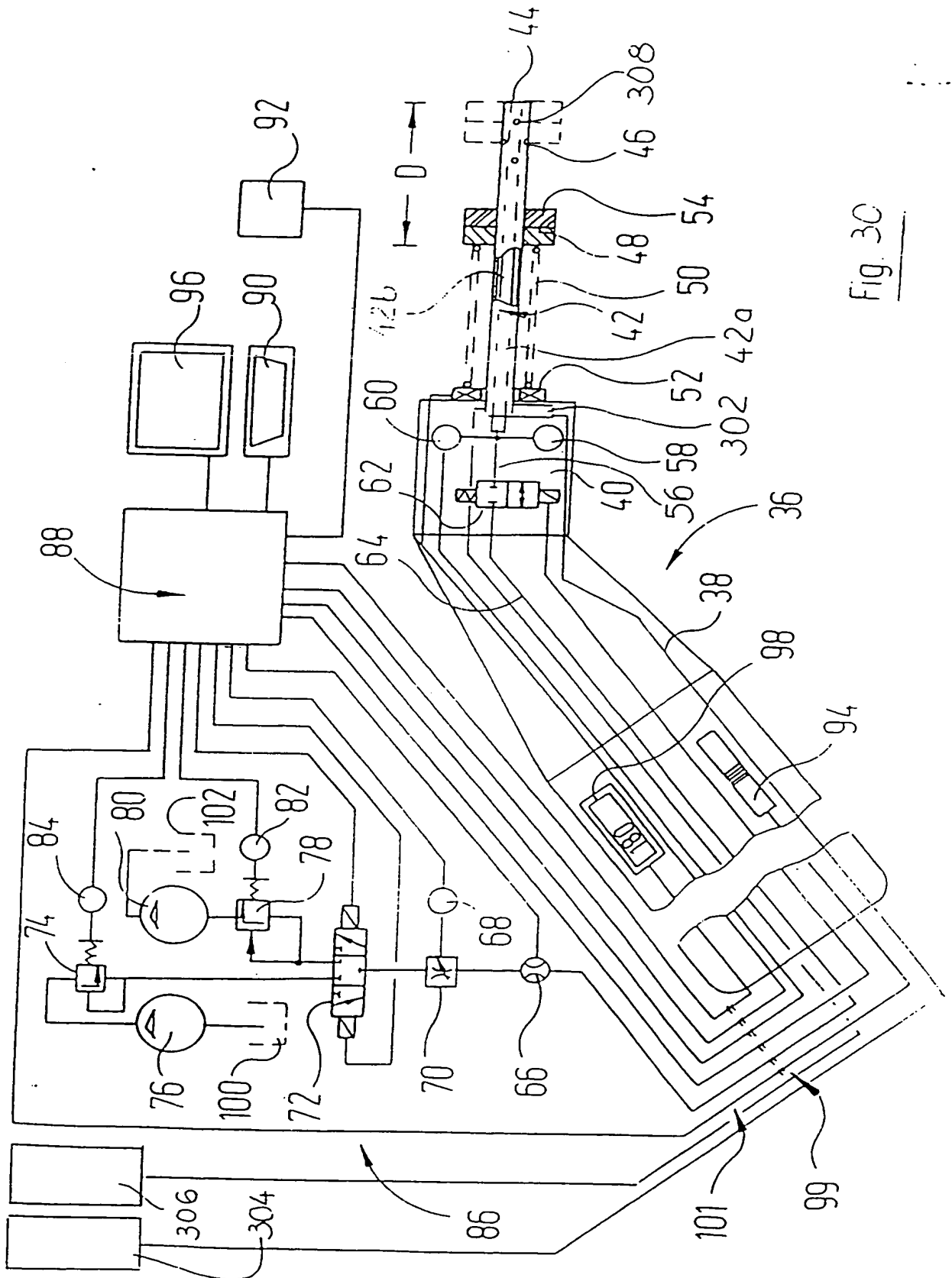


Fig. 30

Outline of the process for the treatment according to the invention of approximal caries

Suspected approximal caries (clinical and/or radiological)

Decision: expectant diagnosis versus microinvasive diagnosis/therapy, for example based on radiological extent
(enamel/dentine boundary not reached - dentine boundary reached - occlusal incursion)

Conv. prophylaxis | microinvasive diagnosis/induced conventional filling treatment
| remineralization/reinfiltration

Monitoring - on progression → preparation of a tubular access (working channel) with max. Conv. prophylaxis
| sparing of dental hard substance (channel or tube)

Measurement and documentation of pressure gradients, amount flowing through,
| structure-sensitive marker substrates

Caries: reversible demineralization

Caries: irreversible structural incursion

Endoscop. video inspection

Hydrodynamic and/or chemical, where appropriate
mechanically assisted
defect preparation through the abovementioned
access

Where appropriate tubular closure of the
working channel

Endoscop. video inspection

Working channel = access for disinfection,
therapeutics, monitoring

Conditioning of the defect surfaces
(priming)

Reversible, bacteria-tight closure of the working
channel or tube

Reinfiltration of organic structures of the defect
for example with hydrophilic synthetic
materials (bridging)

Monitoring, conv. prophylaxis

Possibly definitive closure of the working channel or
of the tubular access in the form of filing

Refilling of the defect, for example with polymer
composite (refilling)

Closure of the access cavity

Fig. 31